

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. : 10/560,525

Applicant : Schulz-Harder et al.

Filed : 03/14/2006

Group Art Unit: 3729

Examiner : Cazan

Docket No. : A-9806

Customer No. : 021884

Title : METHOD FOR MANUFACTURING A CERAMIC/METAL SUBSTRATE

**DECLARATION OF JURGEN SCHULZ-HARDER**

1. I, Jurgen Schulz-Harder, am one of the named inventors in the above-referenced U.S. Patent Application Serial No. 10/560,525 ("the '525 application").
2. The above-referenced application has an International filing date of May 14, 2004 based upon International Application No. PCT/DE04/001012.
3. The International Application claims priority to German Patent Application filed June 16, 2003.
4. I am also the sole named inventor in U.S. Patent No. 6,207,221 ("the '221 patent") and in U.S. Patent No. 6,638,592 ("the '592 patent").
5. I have studied the prosecution history of the '525 application.
6. In rejecting the claims of the '525 application, the U.S. Patent and Trademark Office has asserted that based upon the teaching "from the two Schulz-Harder references, it is readily apparent that the claimed metallization thickness, the claimed substrate thickness, the claimed spacing between metal areas, and the claimed distance between a metal area and a break line are conventional in the art. Therefore, at the time the invention was made, one of ordinary skill in the art would

have found it obvious to apply the method of Kondratenko to a metal-ceramic substrate having the claimed dimensions, because there is nothing critical about the claimed dimensions”.

7. Based upon my knowledge and the understanding of both the '592 patent and the '221 patent, both of which I am intimately knowledgeable as I am the sole inventor of both patents, I can state that the ranges claimed in the '525 application are in no way conventional in the art and the teachings of the '592 patent and the '221 patent are not applicable in showing the obviousness of the claimed ranges to a method as set forth in the above-referenced application.
8. When the separating or break lines are produced in the ceramic layer in between the metal areas by heating and shock cracking, these separating or break lines are formed by additional areas of thermal based mechanical stresses inside the ceramic material and by additional weakening of the ceramic material. This also means, that care must be taken, that there is no overlapping of the weakening of the ceramic layer resulting from applying the metallization to the ceramic layer by the high temperature DCB-process (1025°C to 1083°C) or active soldering (800°C to 1000°C) and of the weakening of the ceramic layer by producing the separating or break lines. This overlapping can only be avoided, if the metal areas have a distance from each other and the respective breaking or separate line as claimed in claim 51. This distance depends also on the thickness of the metal areas, that means on the volume of the metal areas which thickness or volume has of the metal areas which thickness or volume has a major influence on the weakening of the ceramic layer resulting from DCB-bonding or active soldering, that means resulting from cooling the substrate from the high bonding temperature to ambient temperature and from the very expansion co-efficient of ceramic and copper.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: Feb. 21/2011

  
Jürgen Schulz-Harder